BROCADE VDX 6710 DATA CENTER SWITCH

DATA CENTER

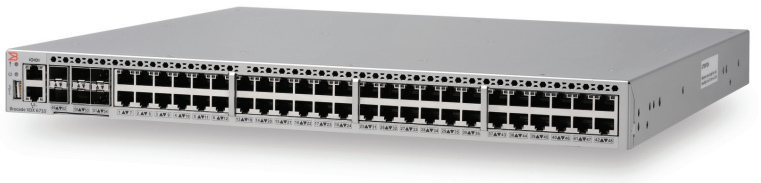
Revolutionizing the Way Data Center Networks Are Built

HIGHLIGHTS

- Supports existing 1 Gigabit Ethernet (GbE) data center server connectivity
- Maximizes performance through 48 wire-speed 1 GbE ports with 600 nanosecond port-to-port latency and hardware-based Inter-Switch Link (ISL) trunking
- Simplifies network architectures and enables cloud computing by delivering Brocade VCS Fabric technology
- Simplifies networking infrastructure by eliminating STP and providing multi-homed active-active server connections for Ethernet networks
- Simplifies virtualization server management by providing Virtual Machine (VM) mobility with dynamic server profile configuration

Seeking better ways to build clouds and virtualized data centers, today's IT organizations are turning to high-performance networking solutions that increase flexibility through leading-edge technologies. The Brocade® VDX™ 6710 Data Center Switch is a high-performance 1 Gigabit Ethernet (GbE) fixed port switch that provides a reliable, scalable, and flexible foundation for supporting the most demanding business applications. It features 48 1 GbE copper interfaces and six 10 GbE SFP+ interfaces, and supports a rich set of Layer 2 features, making the Brocade VDX 6710 an ideal platform for traditional Top-of-Rack (ToR) switch deployments.

Brocade VCS™ Fabric technology enables organizations to build data center Ethernet fabrics—revolutionizing the design of Layer 2 networks and providing an intelligent foundation for cloud-optimized data centers (see Figure 1). The Brocade VDX 6710 can be easily deployed in VCS fabric mode with an add-on software license.



The Brocade One™ strategy helps simplify networking infrastructures through innovative technologies and solutions. Brocade VDX 6710 Data Center Switches support this strategy by simplifying network architecture while increasing network performance and resiliency with Ethernet fabrics.

BROCADE

COMPREHENSIVE LAYER 2 LAN CAPABILITIES FOR CLASSIC ToR SERVER DEPLOYMENTS

The Brocade VDX 6710 supports a rich set of traditional Layer 2 Ethernet protocols and features, including:

- **Comprehensive Layer 2 LAN capabilities:** Supports protocols such as Link Aggregation Control Protocol (LACP) and 802.1Q. The Brocade VDX 6710 is also ready for IPv4/IPv6 Layer 3 routing capabilities, which can be implemented in a future Brocade Network OS release.
- **High-bandwidth efficiency across trunks:** Maximizes performance with hardware-based ISL trunking and wire-speed ports with ultra-low port-to-port latency.
- **Lowest power consumption:** Features superior size and the industry's lowest power consumption—imperative in today's data centers.
- **Scale-out solution for virtualized data centers:** Enables dynamic, large-scale server virtualization deployments in private (IT customers within an enterprise) and public (external customers of managed service providers) clouds with proven scalability capabilities and Layer 2 Equal Cost Multi-Path (ECMP).
- **Local switching:** Delivers high performance for intra-rack traffic in virtualized environments, providing ultra-low latency of 600 nanoseconds for the same ASIC on the switch. This helps organizations design a network with no oversubscription for deterministic network performance and improved application response times, making the Brocade VDX 6710 ideal for performance-demanding environments.

AN INTELLIGENT FOUNDATION FOR CLOUD COMPUTING

Brocade VCS Fabric technology is an innovative technology that enables organizations to build high-performance cloud-optimized data centers while preserving existing network designs and cabling, and gaining active-active server connections. For scale-out fabric architectures, Brocade VCS Fabric technology allows organizations to flatten network designs, provide Virtual Machine (VM) mobility without network reconfiguration, and manage the entire fabric more efficiently. Learn more about Brocade VCS Fabric technology at www.brocade.com/vcs.

ETHERNET STORAGE CONNECTIVITY

The Brocade VDX 6710 connects to iSCSI and NAS storage[1], and simplifies virtualization server management.

Server and Storage Virtualization Automation Support

Brocade VCS Fabric technology offers unique features to support virtualized server and storage environments. During a VM migration, network switch ports must be dynamically configured to ensure that the VM traffic experiences consistent policies and configurations (see Figure 2). The Brocade Automatic Migration of Port Profiles (AMPP) feature enables a seamless migration. Port profiles and MAC address mapping are created on any switch in the fabric. This mapping provides the logical flow for traffic from the source port to the destination port. As a VM migrates, the destination port in the fabric learns of the MAC move and automatically activates the port profile configuration.

Brocade VM-aware network automation provides secure connectivity and full visibility to virtualized server resources with dynamic learning and activation of port profiles. By communicating directly with VMware vCenter, it eliminates manual configuration of port profiles and supports VM mobility across VCS fabrics within a data center. In addition to providing protection against VM MAC spoofing, AMPP and VM-aware network automation enable organizations to fully align virtual server and network infrastructure resources, and realize the full benefits of server virtualization.

Proactive Monitoring

Brocade Fabric Watch is an innovative switch health monitoring feature available on the Brocade VDX 6710. Fabric Watch monitors the health of certain switch components and, based on the threshold set, declares each component as marginal or down.

BROCADE GLOBAL SERVICES

Brocade Global Services has the expertise to help organizations build scalable, efficient cloud infrastructures. Leveraging 15 years of expertise in storage, networking, and virtualization, Brocade Global Services delivers world-class professional services, technical support, and education services, enabling organizations to maximize their Brocade investments, accelerate new technology deployments, and optimize the performance of networking infrastructures.

CLOUD-OPTIMIZED NETWORK ACQUISITION

Brocade helps organizations easily address their information technology requirements by offering flexible network acquisition and support alternatives to meet their financial needs. Organizations can select from purchase, lease, and Brocade Network Subscription options to align network acquisition with their unique capital requirements and risk profiles.

MAXIMIZING INVESTMENTS

To help optimize technology investments, Brocade and its partners offer complete solutions that include professional services, technical support, and education. For more information, contact a Brocade sales partner or visit www.brocade.com.

[1] *The 1 GbE ports do not support Data Center Bridging (DCB).*

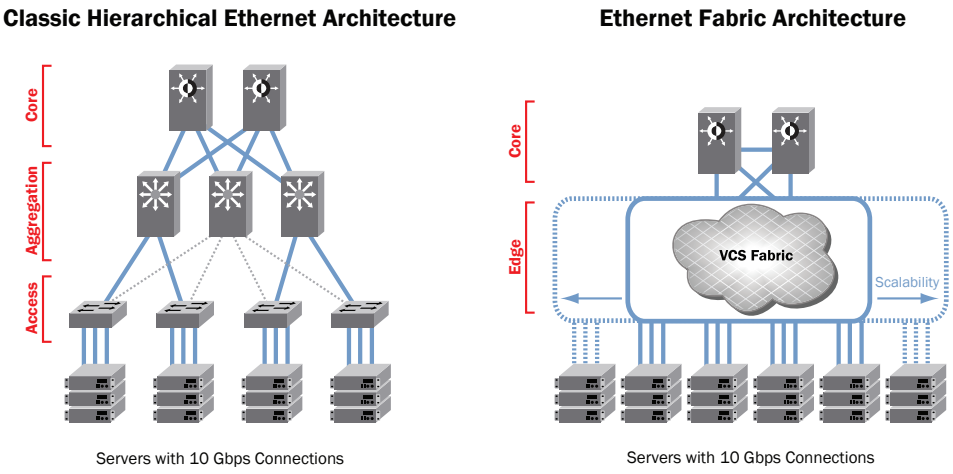


Figure 1.
Compared to classic Ethernet architectures, Ethernet fabrics allow all paths to be active and provide greater scalability—while reducing management complexity.

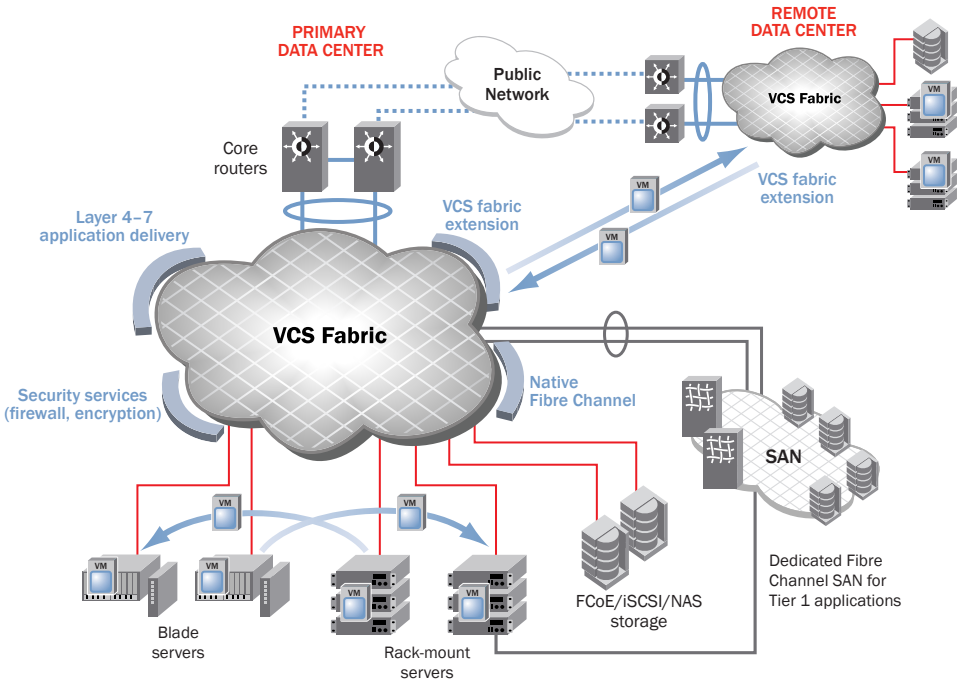


Figure 2.
Brocade VCS Fabric technology simplifies the network architecture, enables unified storage connectivity, improves VM mobility, and allows the seamless insertion of services.

WHAT IS AN ETHERNET FABRIC?

Compared to classic hierarchical Ethernet architectures, Ethernet fabrics provide higher levels of performance, utilization, availability, and simplicity. They are designed to be:

- **Flatter:** Eliminates the need for Spanning Tree Protocol (STP), while being completely interoperable with existing Ethernet networks
- **Flexible:** Can be architected in any topology to best meet the needs of any variety of workloads
- **Resilient:** Uses multiple "least cost" paths for high performance and high reliability
- **Elastic:** Scales easily up and down as needed

More advanced Ethernet fabrics borrow further from Fibre Channel fabric constructs:

- They are self-forming and function as a single logical entity, in which all switches automatically know about each other and all connected physical and logical devices.
- Management can then be domain-based rather than device-based, and defined by policy rather than repetitive procedures.
- These features, along with virtualization-specific enhancements, make it easier to explicitly address the challenges of VM automation within the network, thereby facilitating better IT automation.

Protocol convergence, such as Fibre Channel over Ethernet (FCoE), may also be a feature, intended as a means of better bridging LAN and Storage Area Network (SAN) traffic.

Learn more about Ethernet fabrics at www.brocade.com/ethernet-fabric.

BROCADE VDX 6710 FEATURE OVERVIEW

	Brocade VDX 6710-54
Switching bandwidth (data rate, full duplex)	216 Gbps
Port-to-port latency 10 GbE to 10 GbE ports	600 nanoseconds
Port-to port latency 1 GbE to 1 GbE/10 GbE	1 microsecond
Form factor	1U
Dimensions and weight	Width: 44.0 cm (17.32 in.) Height: 4.37 cm (1.72 in.) Depth: 40.97 cm (16.13 in.) Weight: 8.57 kg (18.90 lb)
1 GbE RJ45 ports	48
1/10 GbE SFP+ ports	6
Power supplies	Two hot-swappable, load-sharing
Cooling fans	N+1 redundant, integrated into power supplies

BROCADE VDX 6710 SPECIFICATIONS

Scalability Information[2]		
Connector options	1 GbE RJ45 1000Base-SX and 1000Base-LX 10 GbE SR and 10 GbE LR 10 Gbps SFP+ options: 1/3/5 m direct-attached copper (Twinax) Out-of-band Ethernet management: RJ-45 (fixed) Console management: RJ-45 to RS-232 (fixed) Firmware and diagnostic: USB	
Maximum VLANs	4096	
Maximum MAC addresses	32,000	
Maximum port profiles (AMPP)	256	
Maximum Layer 2 multicast groups	2000	
Maximum Spanning Tree instances	32	
Maximum per-port priority pause level	8	
Maximum LAG groups in a VCS fabric	512	
Maximum members in a standard LAG	16	
Maximum MAC addresses in a VCS fabric	30,000	
Maximum switches in a VCS fabric	24	
Maximum ECMP paths in a VCS fabric	8	
Maximum trunk members for VCS fabric ports	8	
Maximum switches across which a vLAG can span	4	
Maximum members in a vLAG	16	
Maximum jumbo frame size	9208 bytes	
Queues per port	8	
DCB Priority Flow Control (PFC) classes	8	
Operating system	Brocade Network OS	
Layer 2 switching features	• MAC Learning and Aging • Static MAC Configuration • Link Aggregation Control Protocol (LACP) 802.3ad/802.1AX • Virtual Local Area Networks (VLANs) • VLAN Encapsulation 802.1Q • Rapid Spanning Tree Protocol (RSTP) IEEE 802.1w • Multiple Spanning Tree Protocol (MSTP) IEEE 802.1s • STP IEEE 802.1D	• Per-VLAN Spanning Tree (PVST+/PVRST+) • STP PortFast and PortFast BDPU Guard • STP Root Guard • Layer 2 Access Control Lists (ACLs) • IGMP v1/v2 Snooping • Pause Frames IEEE 802.3x
Brocade VCS Fabric technology features	• Automatic Fabric Formation • Distributed Fabric Services • Transparent LAN Services • Virtual Link Aggregation Group (vLAG) spanning multiple physical switches • Switch Beaconing	• Distributed Configuration Management • Transparent Interconnection of Lots of Links (TRILL) • Equal Cost Multi-Path (ECMP) • Automatic Migration of Port Profiles (AMPP) • VM-aware network automation
DCB features	• Priority-based Flow Control (PFC) IEEE 802.1Qbb • Enhanced Transmission Selection (ETS) IEEE 802.1Qaz	• Data Center Bridging Exchange (DCBX) • DCBX Application Type-Length-Value (TLV) for iSCSI
Quality of Service (QoS)	• Eight priority levels for QoS • Class of Service (CoS) IEEE 802.1p	• Per-port QoS configuration • Scheduling: Strict Priority (SP), Shaped Deficit Weighted Round-Robin (SDWRR)
Switch health monitoring	• Fabric Watch monitoring and notification	

[2] *Please refer to the latest version of the release notes for the most up-to-date scalability numbers.*

BROCADE VDX 6710 SPECIFICATIONS (CONTINUED)

Management		
Management and control	• IPv4/IPv6 management • Industry-standard Command Line Interface (CLI) • Remote lights out management (future update) • In-band management • Link Layer Discovery Protocol (LLDP) IEEE 802.1AB • MIB II RFC 1213 MIB • Switch Beaconing	• Telnet • SNMP v1/v2C, v3 • sFlow RFC 3176 • Out of band management (standalone mode) • RMON-1, RMON-2 • NTP • Management Access Control Lists (ACLs)
Security	• Port-based Network Access Control IEEE 802.1X • RADIUS • TACACS+ • Secure Shell (SSHv2) • BPDU Drop	
Mechanical		
Enclosure	Front-to-rear, rear-to-front airflow; 1U, 19-inch EIA-compliant; power from non-port side	
Environmental		
Temperature	Operating: 0°C to 40°C (32°F to 104°F) Non-operating and storage: –25°C to 70°C (–13°F to 158°F)	
Humidity	Operating: 10% to 85% non-condensing Non-operating and storage: 10% to 90% non-condensing	
Altitude	Operating: Up to 3000 meters (9842 feet) Non-operating and storage: Up to 12 kilometers (39,370 feet)	
Shock	Operating: 20 g, 6 ms half-sine Non-operating and storage: Half-sine, 33 g 11 ms, 3/eg Axis	
Vibration	Operating: 0.5 g sine, 0.4 grms random, 5 to 500 Hz Non-operating and storage: 2.0 g sine, 1.1 grms random, 5 to 500 Hz	
Airflow	Maximum: 60 CCFM Nominal: 44 CFM	
Heat dissipation	443.5 BTU/hr	
Power		
Power supplies	Two internal, redundant, field-replaceable, load-sharing AC power supplies	
Power inlet	C13	
Input voltage	100 V to 240 V ~5 A – 2.5 A	
Input line frequency	47 to 63 Hz	
Inrush current	50 amps max	
Maximum current	3.5 amps max (54-port switch)	
Maximum power consumption	130 W	

Safety Compliance

- Bi-Nat UL/CSA 60950-1 Second Edition
- CAN/CSA-C22.2 No. 60950-1 Second Edition
- EN 60950-1 Second Edition
- IEC 60950-1 Second Edition
- GB4943-2001 and GB9254-1998
- CNS 14336(94)

EMC

- FCC Class A
- ICES A
- VCCI-A
- CE
- C
- BSMI
- GOST
- KC Class A
- CCC

Immunity

- ANSI C63.4
- ICES-003 Class A
- CISPR22 and JEIDA (Harmonics)
- EN55022 and EN55024
- EN55022 or CISPR22 or AS/NZS CISPR22
- CNS 13438(95)
- 51318.22-99 and 51318.24-99
- KN22 and KN24
- GB17625.1-2003

Standards Compliance

Brocade VDX 6710 products conform to the following Ethernet standards:

- IEEE 802.1D Spanning Tree Protocol
- IEEE 802.1s Multiple Spanning Tree
- IEEE 802.1w Rapid reconfiguration of Spanning Tree Protocol
- IEEE 802.3ad Link Aggregation with LACP
- IEEE 802.3ae 10G Ethernet
- IEEE 802.1Q VLAN Tagging
- IEEE 802.1p Class of Service Prioritization and Tagging
- IEEE 802.1v VLAN Classification by Protocol and Port
- IEEE 802.1AB Link Layer Discovery Protocol (LLDP)
- IEEE 802.3x Flow Control (Pause Frames)

BROCADE VDX 6710 ORDERING INFORMATION

SKU	Description	Comments
BR-VDX6710-54-F	Brocade VDX 6710, 48P GbE, 6P SFP+, AC, non-port side exhaust airflow	Base SKU
BR-VDX6710-54-R	Brocade VDX 6710, 48P GbE, 6P SFP+, AC, port side exhaust airflow	Base SKU
XBR-250WPSAC-F	FRU 250W ACPS/FAN, non-port side exhaust airflow	Base SKU
XBR-250WPSAC-R	FRU 250W ACPS/FAN, port side exhaust airflow	Base SKU
XBR-VDX6710-54-F	Brocade VDX 6710, 48P GbE, 6P SFP+, FRU, AC, non-port side exhaust airflow	Base SKU
XBR-VDX6710-54-R	Brocade VDX 6710, 48P GbE, 6P SFP+, FRU, AC, port side exhaust airflow	Base SKU
BR-VDX6710-54VCS-01	VCS software license for Brocade VDX 6710-54	Software orderable
E1MG-SX-OM (1-pack) E1MG-SX-OM-8 (8-pack)	1 Gbps 1000Base-SX	Optics
E1MG-LX-OM (1-pack) E1MG-LX-OM-8 (8-pack)	1 Gbps 1000Base-LX	Optics
10G-SFPP-SR (1-pack) 10G-SFPP-SR-8 (8-pack)	10 Gbps SR optic	Optics
10G-SFPP-LR (1-pack) 10G-SFPP-LR-8 (8-pack)	10 Gbps LR optic	Optics
10G-SFPP-TWX-0101 (1-pack) 10G-SFPP-TWX-0108 (8-pack)	10 Gbps SFP+ direct-attached cables, 1 m Twinax copper cable	Optics
10G-SFPP-TWX-0301 (1-pack) 10G-SFPP-TWX-0308 (8-pack)	10 Gbps SFP+ direct-attached cables, 3 m Twinax copper cable	Optics
10G-SFPP-TWX-0501 (1-pack) 10G-SFPP-TWX-0508 (8-pack)	10 Gbps SFP+ direct-attached cables, 5 m Twinax copper cable	Optics

Corporate Headquarters
San Jose, CA USA
T: +1-408-333-8000
info@brocade.com

European Headquarters
Geneva, Switzerland
T: +41-22-799-56-40
emea-info@brocade.com

Asia Pacific Headquarters
Singapore
T: +65-6538-4700
apac-info@brocade.com

© 2011 Brocade Communications Systems, Inc. All Rights Reserved. 10/11 GA-DS-1606-01

Brocade, the B-wing symbol, DCX, Fabric OS, and SAN Health are registered trademarks, and Brocade Assurance, Brocade NET Health, Brocade One, CloudPlex, MLX, VCS, VDX, and When the Mission Is Critical, the Network Is Brocade are trademarks of Brocade Communications Systems, Inc., in the United States and/or in other countries. Other brands, products, or service names mentioned are or may be trademarks or service marks of their respective owners.

Notice: This document is for informational purposes only and does not set forth any warranty, expressed or implied, concerning any equipment, equipment feature, or service offered or to be offered by Brocade. Brocade reserves the right to make changes to this document at any time, without notice, and assumes no responsibility for its use. This informational document describes features that may not be currently available. Contact a Brocade sales office for information on feature and product availability. Export of technical data contained in this document may require an export license from the United States government.

BROCADE